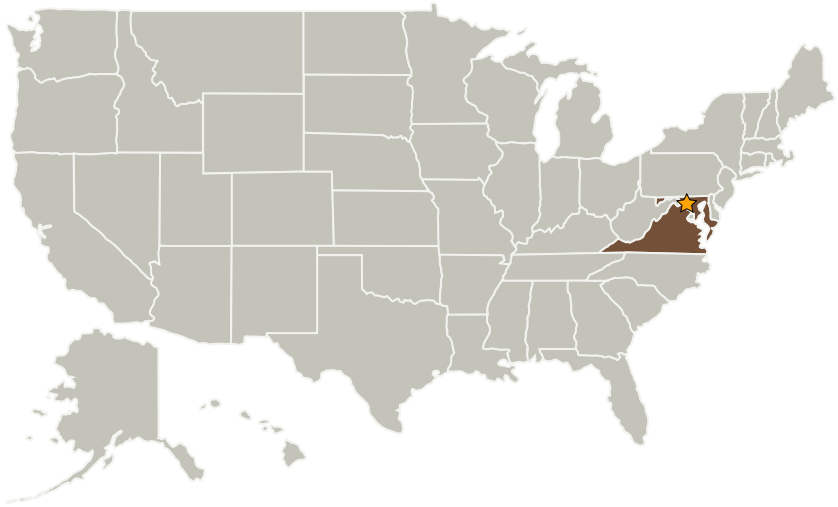
Fault Tolerant Digital Signal Processing (DSP), Phase I

Completed Technology Project (2005 - 2005)

Project Introduction

This document proposes that a network routing protocol, such as the popular Internet Protocol (IP), can be combined with high speed switching fabrics to create a hardware independent routing environment for software radio. The flexible routing provided by such a network layer would allow signal streams to be dynamically routed (and re-routed) between computational elements. This would allow software radio designers to build flexible, fault tolerant signal processing chains for many applications and hardware implementations. This is innovative because conventional IP implementations cannot meet the performance requirements (throughput, jitter, latency) of software radio data streams. The innovation of this research stems from the unique combination of software radio development requirements, advances in network and transport layer designs to support high-speed switching fabrics, and the inherent capabilities provided by IP.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Goddard Space Flight Center(GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Invertix Corporation	Supporting Organization	Industry	Annandale, Virginia

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Table of Contents

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations	
Maryland	Virginia

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Graham Stead

Technology Areas

Primary:

- TX02 Flight Computing and Avionics
  - TX02.1 Avionics Component Technologies
    - TX02.1.3 High Performance Processors